



Chapter 10

Technology

Education Program

Evaluation

MISSOURI TECHNOLOGY EDUCATION GUIDE
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Technology Education Program Evaluation

1. Introduction

There are basically three types of evaluations a TE program can undergo: Local (internal) evaluation, school accreditation and state evaluation. Each Evaluation serves a different purpose but all focus on program improvement.

2. Local (internal) Evaluation

These evaluations focus on the improvement of instruction and are conducted by school personnel. Such “in house” evaluations are often conducted on a yearly basis. This type of evaluation should not be informal and incidental, but rather formal in nature. In other words the process should be conducted on a formalized, scheduled and official basis with the results recorded for the board of education’s review. These internal program reviews allow school personnel to make adjustments to programming, facilities and equipment, often with the guidance of the TE advisory committee. The Missouri TE Standards (available from Missouri’s TE Supervisor) are an excellent basic framework for this kind of evaluation.

3. School Accreditation

Missouri schools may elect to pursue external and/or state accreditation. The North Central Association of Schools and Colleges (NCA) provides the mechanism for external accreditation. The accreditation process is voluntary and thus is quite flexible in permitting local procedures to vary considerably. However the basic elements and sequences are typically similar. They involve:

1. A request for accreditation to NCA
2. Conduct a self-study that involves:
 - Formation of a local committee
 - Self-evaluation of each program (TE is one)
 - Self-evaluation of school-and community-wide functions
 - Compilation of appropriate documentation
3. Establishment of a visiting team
4. Visiting team’s review of self-study as prepared by the school’s local team
5. Visiting team’s on-site visit including:
 - Program by program review
 - Overall function review
 - Validation of documentation
 - Exit report
6. Visiting teams report of findings

7. Visiting team leader and local committee interaction establishing required follow-up
8. One year follow-up of required action.

It is important for TE instructors to consider such accreditation procedures as an opportunity—not a threat. Often such accreditation reports provide the kind of support that secures long-needed improvements. To facilitate this it is strongly encouraged that the local TE instructors nominate two or three highly respected technology educators to serve on the visiting team. Don't just select friends or colleagues who you think would be "easy" on the program.

The NCA does not mandate any given set of evaluation instruments. Instead it encourages local institutions to use standards of "appropriate professional organizations." To ease matters however, the NCA provides a set of evaluation criteria that are produced by the National Study of School Evaluation (NSSE). A sample page from version six of their Technology Education criteria is provided in Figure 10-1. Because of the national process used, such criteria lag somewhat behind the profession's pulse so these criteria do not necessarily represent the profession's current thinking. Therefore it is recommended that for accreditation purposes, local schools update the NSSE criteria with the Missouri TE Standards (available from Missouri's Supervisor of TE). The combined use of these two sets of criteria would make for an exceptionally strong self-evaluation.

4. State (DESE) Evaluation

Missouri's Department of Elementary and Secondary Education recommends that all TE programs be evaluated periodically. For programs receiving special state and/or federal funding, such evaluations typically need to be conducted at least once every five years. The current program for such evaluations is called the Missouri School Improvement Program.

As with accreditation procedures, it is recommended that state evaluations begin with a systematic self-evaluation. To help in this, Missouri DESE's technology education section provides a set of standards and Program Evaluation criteria. They were subsequently endorsed by the Technology Education Association of Missouri (TEAM). This instrument, a sample of which is provided in Figure 10-2, includes administration, evaluation, instruction, and recommendations sections. State evaluation also involves a visiting team's on-site evaluation. As with accreditation assessment, it is strongly recommended that TE instructors present a fair and complete picture of their program's strengths and weaknesses.

Figure 10-1

**Evaluative criteria from the National Study of School Evaluation:
Technology Education, Sixth Edition* (sample page)**

Section 4-16 Technology Education

1. Teachers plan and provide for evaluating the effectiveness of their instruction..... 5 4 3 2 1 n/a
2. Alternatives and appropriate methods to assist students in meeting course objectives are provided by teachers..... 5 4 3 2 1 n/a
3. Students develop an insight and understanding of the technological society as a result of activities in courses 5 4 3 2 1 n/a
4. Emphasis is placed upon improving student ability to make informed and meaningful career choices..... 5 4 3 2 1 n/a
5. Technology education prepares students for collegiate and/or advanced vocational/technical programs and equips them with university transferable technological skills..... 5 4 3 2 1 n/a
6. Emphasis is placed upon preparing students for life-long learning in a technological society..... 5 4 3 2 1 n/a
7. Instructional activities develop student skills, positive self-concepts and individual potentials in technology..... 5 4 3 2 1 n/a
8. Instructional activities are designed to teach the application of tools, materials, machines, processes and technical concepts safely and efficiently..... 5 4 3 2 1 n/a
9. Instructional activities promote the development of process skills such as creative - critical thinking, decision making and problem solving. 5 4 3 2 1 n/a
10. Both teacher-centered and student-oriented instructional methods are utilized..... 5 4 3 2 1 n/a

Rating Scale: 5 = Excellent; 4 = Good; 3 = Fair; 2 = Poor; 1 = Missing but needed
N/A = Not Applicable

* The complete evaluation instrument for Technology Education may be secured from Missouri's Technology Education Supervisor.

5. Program Planning Quality Control

TE instructors who update their programs or who plan new ones often want to know if their plans align with the generally accepted standards of the profession. One efficient way of double-checking one's work is to use the MO TE Standards as a checklist.

Figures 2-2 and 2-3 present the topics most appropriate to program planning.

Figure 10-2
MOTE Standards, Topic 2: Instructional Program

The instructional program in technology education will provide youth with knowledge, skills, and attitudes to intelligently create and control their environment. Such a comprehensive program will need to reflect our rapidly changing technological society. The statements contained within this standard topic concern the instructional program. This program, which reflects the stated philosophy, provides a wide variety of organized experiences for all students. These experiences assist learners in reaching predetermined goals.

Fill in marks to indicate assessment: 0 Not Met, 0 Met, 0 Exceeded

	Not Met	Met	Ex
1. Emphasis is placed upon assisting student in developing insight and understanding of our technological society	-	-	-
2. Emphasis is placed upon improving student ability to make informed and meaningful occupational/career choices	-	-	-
3. Emphasis is placed upon preparing students for entry into specialized technical training and/or advanced professional programs in technology	-	-	-
4. Emphasis is placed upon preparing students for entry into advanced trade and industrial, technical, or other advanced education programs.	-	-	-
5. Emphasis is placed upon preparing students for lifelong learning in a technological society.	-	-	-
6. Emphasis is placed upon developing student talents, creative abilities, positive self-concepts, and individual potentials related to technology areas.	-	-	-
7. Emphasis is placed upon developing student abilities in the safe and proper use of tools, materials, machines, and processes.	-	-	-
8. Emphasis is placed upon applying tools, materials, machines and processes, and technical concepts safely and efficiently.	-	-	-
9. Emphasis is placed upon developing student problem-solving and decision-making abilities involving human and material resources, processes and technological systems.	-	-	-
10. Emphasis is placed upon reinforcing the basic skills and interrelating the content of technology with other school subjects.	-	-	-
11. Emphasis is placed upon developing leadership ability, encouraging	-	-	-

and promoting responsibility, and developing positive social interaction through TSA.			
12. Program goals are written and are on file. (Note: if the answer is “no,” then standards 30-34 are also marked “no.”)	-	-	-
13. Program goals are consistent with local, state, and national standards and emerging developments in technology education.	-	-	-
14. Program goals are developed with input from teachers, administrators, students, representatives from business and industry, and other consultants, as necessary.	-	-	-
15. Program goals are utilized by teachers and administrators for planning, implementing, and evaluating courses.	-	-	-
16. Program goals are reviewed annually and revised when necessary.	-	-	-
17. Course objectives, written in measurable terms, are presented to students and are kept on file. (Note: if the answer is “no,” then standards 36 & 37 are also marked “no”)	-	-	-
18. Course objectives are utilized by teachers and administrators for planning, implementing, and evaluating course content and instructional methods.	-	-	-
19. Course objectives are utilized as a basis for developing the technology education component of the Individualized Education Program (IEP).	-	-	-
20. Course content is developed from course objectives and utilized approved curriculum guides, courses of study, and other professional resources.	-	-	-
21. Course content is offered in the broad categories based on the National Standards for Technological Literacy.	-	-	-
22. Course content is selected to provide for all students.	-	-	-
23. Course content includes the development of personal and leadership skills through TSA.	-	-	-
24. Courses in the technology education program are sequential, beginning with broad orientation and exploration of subject matter areas, followed by specialized experiences.	-	-	-
25. Course content represents the state of the art in technology.	-	-	-
26. Course content is organized into course outlines, unit plans, and lesson plans which are on file.	-	-	-
27. An accurate description for each course is available to all students prior to enrollment.	-	-	-
28. Course content is reviewed annually and revised when necessary.	-	-	-

Number of the topic's standards that were not met (0), met (0), and exceeded (0): _____

Figure 10-3

Missouri Technology Education Program Standards (sample)

(to be replaced by State Supervisor)

6. Linking the Technology Education Program to Missouri's Show-Me Standards

One of the strongest arguments to be made for the TE program is its contributions to the educational goals for the state of Missouri, and the core competencies and key skills that define them, the Show-Me Standards. The Show-Me Standards are available from the Missouri Department of Elementary and Secondary Education web site. Given the importance of these goals and competencies, it is critically important that the TE program evaluation documents the link between TE participation and the achievement of Missouri's education goals and core competencies. Therefore, technology educators would be well advised to build into their evaluation questions and methods that secure data to show how their program contributes to students' mastery of core competencies.

Show-Me Standards Link: <http://www.dese.state.mo.us/standards>

7. Follow-up Evaluations with Former Students

As part of any of the types of evaluations (local, accreditation, state) a follow-up of students can provide many useful insights. Therefore it is recommended that each TE program conduct and maintain careful records of a follow-up of its students. Such a study should record:

- Data descriptive of the students flowing through the program, e.g., age, gender, GPA, socio-economic status, career aspirations, educational plans, test scores.
- Data showing what kind of educational experiences students had after participating in the TE program.
- Data showing what kind of work experiences they had during and after participating in the TE program.
- Similar data for comparable students **without** TE program experiences.

To conduct follow-up evaluations, the TE instructor typically tracks students who have participated in TE—for several years after they have done so. Typical follow-up intervals are 1 year, 3 years, and 5 years after TE. In order for such evaluations to succeed the school must keep careful enrollment and address records both while the students are in school and for at least 5 years after they graduate or leave school.

Typically, because of costs and the work involved, one samples the students who have taken TE rather than surveying all of them. The actual survey method could be:

- Telephone interview
- Mail survey
- In-person interview (at home)

The following represents some typical questions that may be posed in various ways in a follow-up survey.

- What do TE students think of the program? Did students enjoy TE?
- How useful was the TE program in developing career and technology awareness?
- Did TE enhance their undertaking of science and technology?
- What courses were taken after TE?
- How useful was TE in securing a job?
- Was TE helpful in identifying and preparing for advanced vocational-technical education?
- Did TE help them with consumer decisions?

8. Missouri School Improvement Program

The basic objective of the Missouri School Improvement Program is to recognize educational resources and provide direction and assistance in the development of quality programs in the public schools. This program involves annual monitoring of critical indicators and on-site reviews, the latter conducted by a team of MO DESE, school and university personnel. Prior to the on-site review, the school's teachers respond to a set of advance questions in the areas of:

- Curriculum development and implementation
- Instructional climate
- Learning resource centers
- Guidance counseling
- Professional development
- Supplemental program
- Governance and administration
- Facilities and safety
- Support services

As with all professional evaluations, there is no need for anxiety in addressing the questions/issues. It is always best to respond openly and honestly—after all—who is better equipped to provide an insightful assessment of a school's functioning than its professional staff?

After the school has prepared all of the materials for the MO School Improvement Program, an on-site review will occur. This review will include careful procedures to ascertain and validate the extent to which the school meets the various standards. TE teachers in particular will want to be prepared for the teacher interview should they be sampled.

9. Missouri Technology Education Program Standards

The TE profession's state leaders have produced standards (a sample is shown in figure 10-3) for the program. Properly used, they will yield a valid indication of the quality of a program. These standards may be obtained from the Missouri TE Supervisor.

10. National Technology Education Program Standards

A major national effort has produced a series of standards to facilitate technology education. These standards include:

- Content standards
- Assessment standards
- Program standards
- Professional development standards

Each of these is designed to improve the teaching and learning process in technology education programs. These standards may be obtained from the International Technology Education Association, 1914 Association Drive, Reston, VA 20191, or from their web site:

<http://www.iteawww.org>

A sample of the Program Standards are included in Figure 10-4.

Figure 10-4 ITEA's Technology Education Program Standards

Nature of Technology

1. The Characteristics and Scope of Technology
2. The Core Concepts of Technology
3. Relationships Among Technologies and the Connections Between Technology and other fields

Technology and Society

4. The Cultural, Social, Economic, and Political Effects of Technology
5. The Effects of Technology on the Environment
6. The Role of Society in the Development and Use of Technology
7. The Influence of Technology on History

Design

8. The Attributes of Design
9. Engineering Design
10. The Role of Troubleshooting, Research and Development, Invention and innovation, and Experimentation in Problem Solving

Abilities for a Technological World

- 11. Apply Design Process
- 12. Use and Maintain Technological Products and Systems
- 13. Assess the Impact of Products and Systems

The Design World

- 14. Medical Technologies
- 15. Agricultural and Related Biotechnologies
- 16. Energy and Power Technologies
- 17. Information and Communication
- 18. Transportation Technologies
- 19. Manufacturing Technologies
- 20. Construction Technologies